Innovative. Open-minded. Responsible.

We create the future with 5.500 students in economics and technology and 550 employees. Success in application oriented education, research, and executive education is our incentive.

Create this future with us as a

Research Associate (m/f) / PhD Student
”Hydraulic tomography in fractured rocks“

Center of Applied Research
Institute of new Energy Systems

(Reference number P-18/77)

The **Institute of new Energy Systems (InES)** is one of three institutes at the center of applied research at Technische Hochschule Ingolstadt (THI). Currently, there are six professors and more than 20 scientists at InES working on pioneering technologies in the field of renewable energies. Please visit www.thi.de/go/energy for details on selected research projects at InES.

We are seeking a PhD candidate for a research project fully funded by the German Research Foundation (DFG). The project aims to develop computer-based concepts for characterization of fractured rocks and aquifers.

Fractured rocks host productive aquifers which are the target for geothermal systems. A major challenge is the reliable characterization of fracture systems that are relevant for flow and transport processes. Recent developments in numerical modelling techniques are impressive, with growing capabilities in computationally efficient, realistic, high-resolution, and coupled simulation. Still, the associated data hunger of numerical models is barely fed by available field measurements. Especially features unique for each site, such as fracture geometries, require attuned site investigation techniques. Even if a site is well investigated, methods are needed for integrating measured data in a model. This project proposes the use of tomographic borehole tests with water and tracer injection to characterize fractures relevant for flow and transport. By combining the insight from tomographic tests in several boreholes, the reconstruction of fracture geometries is facilitated. This will be accomplished by the development of mathematical inversion procedures that calibrate discrete fracture networks. Project partner is the RWTH Aachen. Research stays with the partner universities will be supported.

Your responsibilities:

- Application and generation of numerical discrete fracture models based on existing simulation tools
- Development of innovative computer-based inversion concepts
- Validation with existing data from tomographic experiments
- Project coordination with partners from academics and supervision of B.Sc. and M.Sc. students
- Presentation of results at conferences and publishing in peer-reviewed journals

Your profile:

We are seeking a creative and independent person with programming skills and a passion for science and willingness to work in an evolving interdisciplinary team. Applicants must have a completed master's degree in geophysics, geosciences, applied mathematics, physics, informatics, engineering, or any related field. Applicants must also be able to learn and pursue quantitative research and computational tasks. Good communication skills are essential. Skills in speaking, reading, and writing about science in English are obligatory.

We offer a temporary full-time position lasting three years. Applications will be reviewed until the position is filled. The remuneration shall be in line with the German industrial agreement L salary group 13. **The possibility of a cooperative doctorate will be supported.** The positions starts as soon as possible.

The ideal applicant should be comfortable in a multi-faceted, responsible position and should have the ability to work effectively both independently and with a team. We offer a family-friendly working environment, flexible working hours, and an attractive workplace.

If you have any questions please contact **Prof. Peter Bayer (peter.bayer@thi.de)** or **Dr. Ingo Dressel (ingo.dressel@thi.de).**

Individuals with disabilities of the same suitability will be favoured for this position. We strongly encourage applications from female candidates (Section 7 Subsection 3 BayGIG, Bavarian Women's Equality Law).

Please send your detailed portfolio (Curriculum Vitae, copies of certificates, short statement of research experience and interest, the names and contact information of two potential referees, and supporting documents about former employment) **stating the reference number** as a PDF file by 8th **of July 2018** to karriere@thi.de.

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